



Influenza Epidemiology Summary Report RI 2005-2006

RI Department of Health (HEALTH)
Center for Epidemiology
Office Of Communicable Diseases

Spring 2006

Synopsis

This report summarizes influenza surveillance results for Rhode Island from October 2, 2005-April 22, 2006 and compares the results to the previous season. The 2005-2006 influenza season was unusually mild in Rhode Island overall as it was nationally. The RI season was marked by low levels of circulating flu from October to the last week of December 2005 when influenza like illness (ILI) rate rose to 1.7%, the highest level for this season. The levels then fell during January 2006 and rose slightly again during the months of February and March 2006 but did not reach the 1.7% as reported in December 2005. Influenza activity in Rhode Island closely followed the national pattern. Peak activity on the national level occurred the last week of December as it did in Rhode Island. Influenza A(H3N2) viruses predominated during this season in Rhode Island as it did nationally, and as it did last season; influenza A(H1) and B viruses also circulated both nationally, regionally and statewide.

This summary is based on data reported by the Centers for Disease Control (CDC), by the U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) Collaborating Laboratories (of which the RI State Laboratory is a member), the RI Influenza Sentinel Providers, the 121 Cities Mortality Reporting System of which Providence is a city, and data submitted by clinical and hospital laboratories throughout Rhode Island.

RI Influenza Surveillance Systems

The goal of surveillance is to assess annual influenza activity levels, measure mortality impact, characterize circulating influenza strains to guide anti-viral therapy, determine whether the vaccine strain for the annual formulation is a match with the circulating strain, and detect pandemic strains. In Rhode Island five surveillance systems are closely monitored.

1. **Influenza Sentinel Provider Surveillance System:** Currently, 17 Rhode Island sentinel providers are participating in the HEALTH/CDC passive surveillance system (Table 2, page 10). The sentinel system combines both laboratory testing and the weekly reporting of ILI cases (by age group) as a proportion (percentage) of all patients seen in their respective practices. Sentinel providers submit weekly data to the Centers for Disease Control and Prevention (CDC) via the Internet or fax. Sentinel providers are also responsible for routine submission of swabs to the state laboratory for influenza virus detection by polymerase chain reaction (PCR) and culture testing.
2. **Rhode Island Influenza Rapid Testing Surveillance:** Laboratories throughout the state that conduct rapid tests for influenza fax results to the Department of Health, Office of Communicable Diseases. This reporting is on a voluntary basis.

3. **Institutional Cluster and Outbreaks Surveillance:** Institutional clusters and outbreaks are mandatory reportable events. An institutional cluster is defined as three (3) or more cases of laboratory confirmed influenza-like illness (ILI) in a long-term care facility (LTCF), school or other congregate environment (Appendix B).
4. **Laboratory Surveillance for Influenza:** Since 2004, the state laboratory has been typing and subtyping influenza A viruses using real time PCR techniques. The State virology laboratory was certified as a WHO accredited laboratory in 2005. The State virology lab also has the ability to test a respiratory panel of viruses that includes parainfluenza, respiratory syncytial virus and adenovirus.
5. **Pneumonia and Influenza Mortality:** The City of Providence is included in the 121 Cities Pneumonia and Influenza (P&I) mortality reporting system. This data is reported by the Department of Health's Office of Vital Records and is published weekly in the [Morbidity and Mortality Weekly Report \(MMWR\)](#) published by CDC.

Reporting of Weekly Activity Levels to CDC

The State Epidemiologist reports the RI influenza activity level to CDC on a weekly basis. The activity level is a composite of geographic spread and level of ILI as reported by sentinel providers combined with laboratory positive results and institutional outbreak reports (see Appendix A for description of how influenza activity is determined). This information is then posted weekly on the Department of Health Website at <http://www.health.ri.gov/flu/activity.php>.

Newer Surveillance Systems

As of February 2006, The Rules and Regulations Pertaining to the Reporting of Communicable, Environmental and Occupational Diseases have been revised to include the mandatory reporting of 1) influenza associated pediatric deaths and 2) influenza associated hospitalizations.

To continue to monitor for cases of Avian Influenza the Office of Communicable Disease recommends that all cases of clinically suspected Avian Influenza (acquired during travel to the far east) be reported immediately by telephone to 222 2577 or 272 5952 (after hours). See <http://www.health.ri.gov/avian/index.php> for more information on avian flu. These cases as well as influenza associated pediatric deaths and associated surveillance specimens are a priority for testing at the state laboratory.

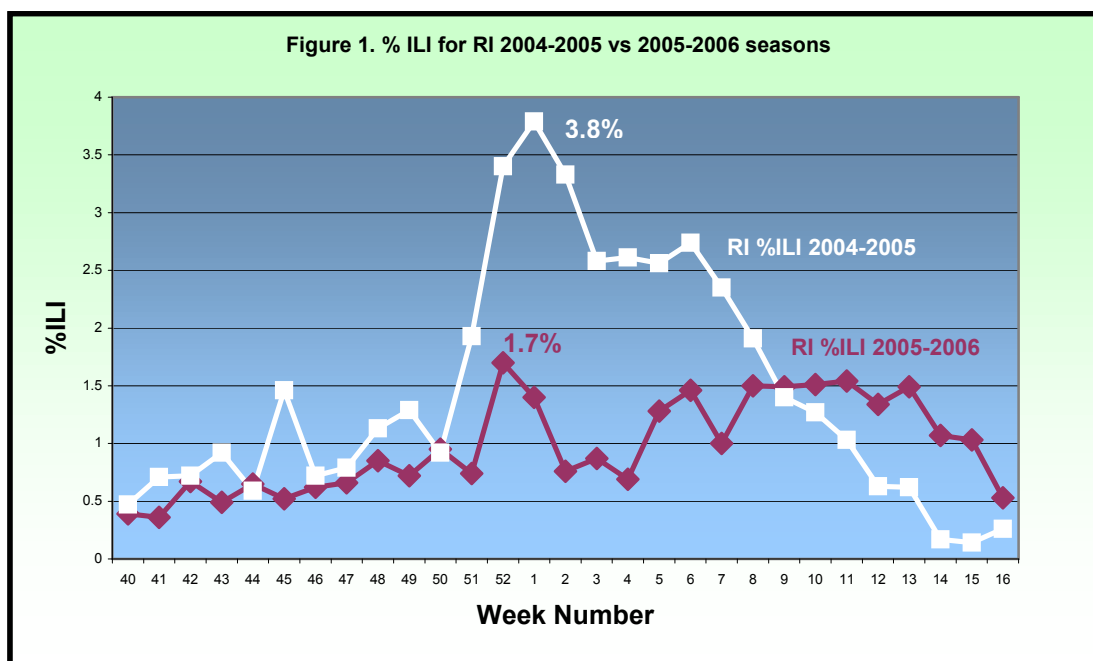
Results of the 2005-06 Sentinel Surveillance System

ILI Reports

The surveillance data provided by the influenza sentinel provider surveillance system for the 2005-2006 influenza season indicates that the current influenza season was mild. The percent of ILI peaked the last week of December 2005 and then tapered. Levels of ILI increased slightly during February and March 2006. Between October 2, 2005 and April 22, 2006, RI sentinel providers reported 1016 cases of ILI out of a total of 104,467 patient visits or 0.9%. This is compared with 1646 cases of ILI out of a total of 100,141 patient visits or 1.6% for the same timeframe during the 2004-2005 influenza season.

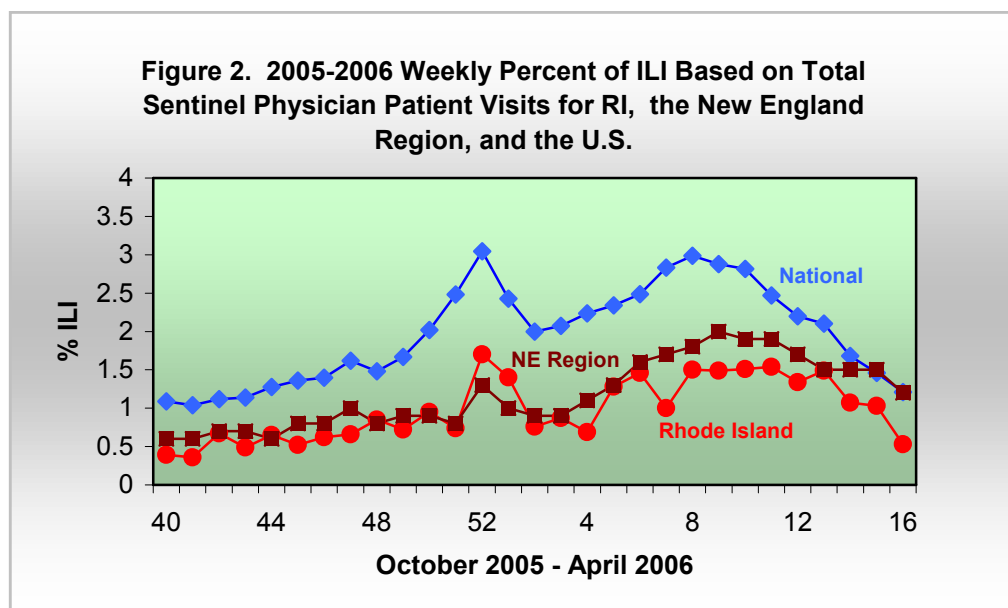
Peak activity in %ILI for the 2005-06 season and the 2004-05 season occurred in the last week of December and continued through the first several weeks of January. The peak activity level for 2004-2005 was 3.8% ILI compared with 1.7% ILI for the 2005-2006 season (Figure 1).

All figures are presented using the week number. This is modeled on the CDC format. For the corresponding dates see Appendix C.



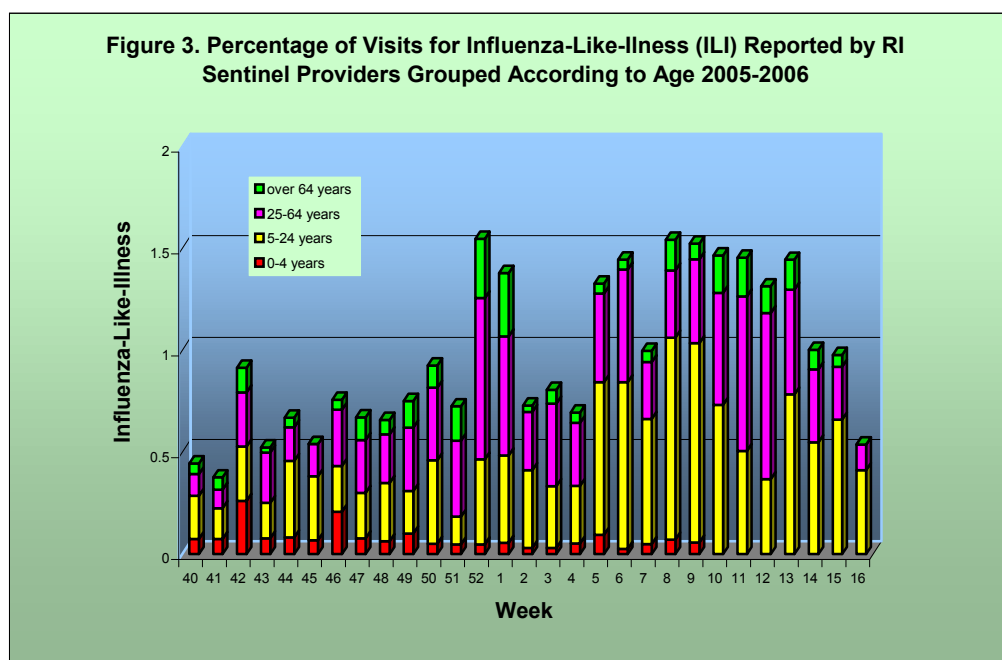
2005-06 Rhode Island Sentinel Surveillance Data Compared with the New England Region and the Nation

The %ILI reported by the sentinel providers in Rhode Island closely traced the curve generated from the data cumulated from the other New England states (Figure 2). The %ILI curve for RI was a little higher during the peak of the season (December 31, 2005-February 11, 2006) than for the New England region as a whole. National levels also peaked at this time with 3.1 % being the highest %ILI reported.



ILI By Age Group

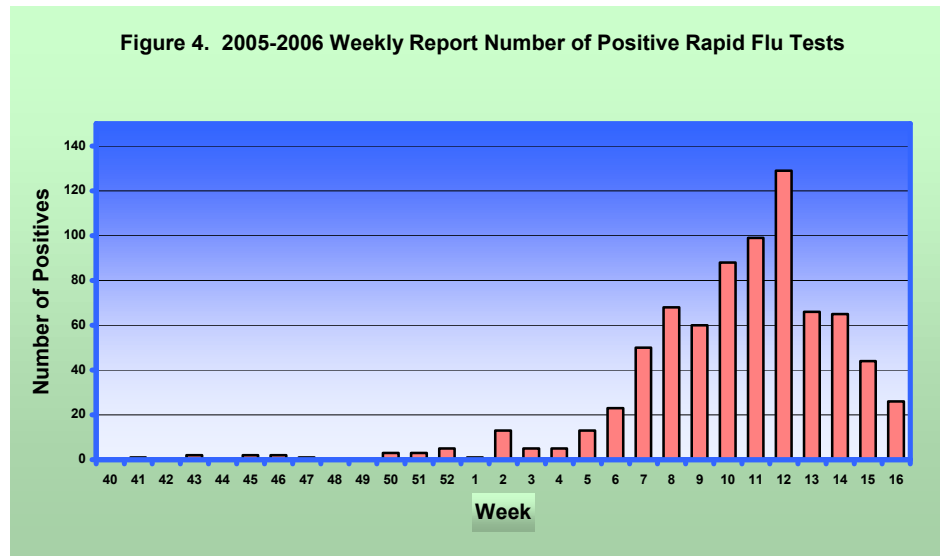
The surveillance data was further analyzed based on the age of the patients. The yellow and purple areas in Figure 3 indicate that the 5-24 and 25-64 year old age groups respectively, were the most vulnerable to influenza this year. The sentinel surveillance system showed a high of 0.99% frequency of ILI for the 5-24 year olds during weeks 8 and 9 (February 19-25) and 0.80% frequency of ILI for the 25-64 year old group (Dec 25-31, 2006 and March 19-25, 2006). The lowest incidence of ILI was reported in the 0-4 year age group. This pattern is consistent with the vaccine recommendations made this past season, with a supply prioritized for children and elderly (Figure 3).



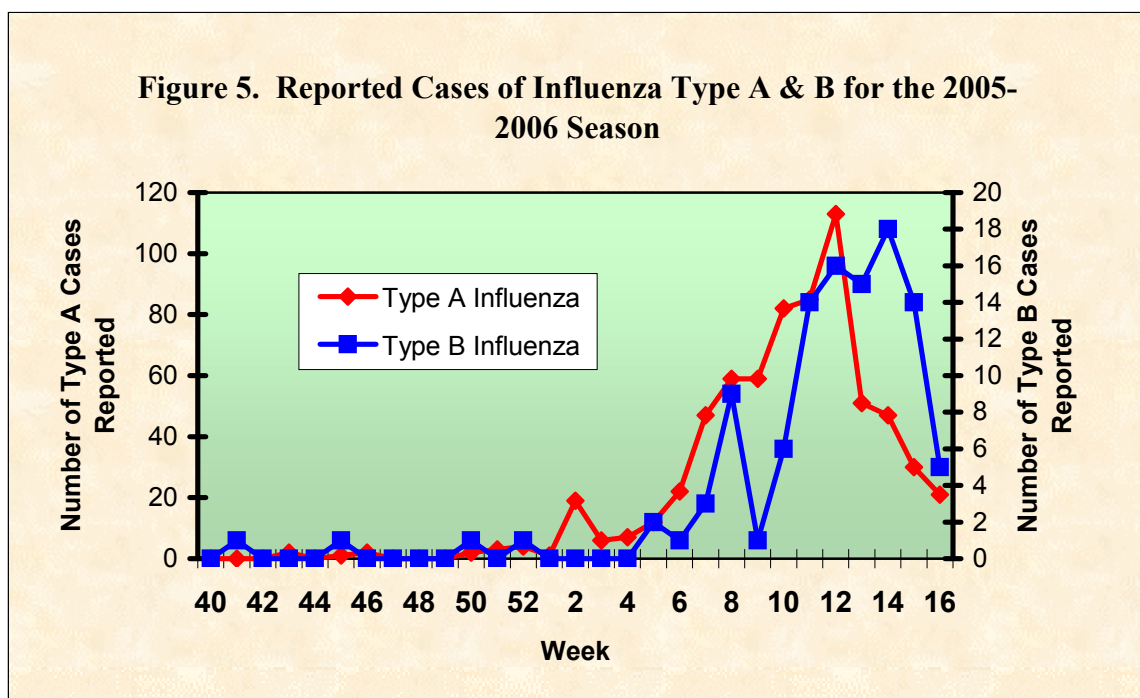
2004-'05 Laboratory Reporting

Rapid Tests for Influenza

Clinical Laboratories around the state voluntarily submit positive influenza results. The weekly rate of reported positive influenza cases from laboratories throughout the state showed significant increases around the end of January 2006 (week 5) indicating some lag time in specimen testing from the peak weeks of highest reported influenza activity in late December – early January, 2006 (Figure 4).



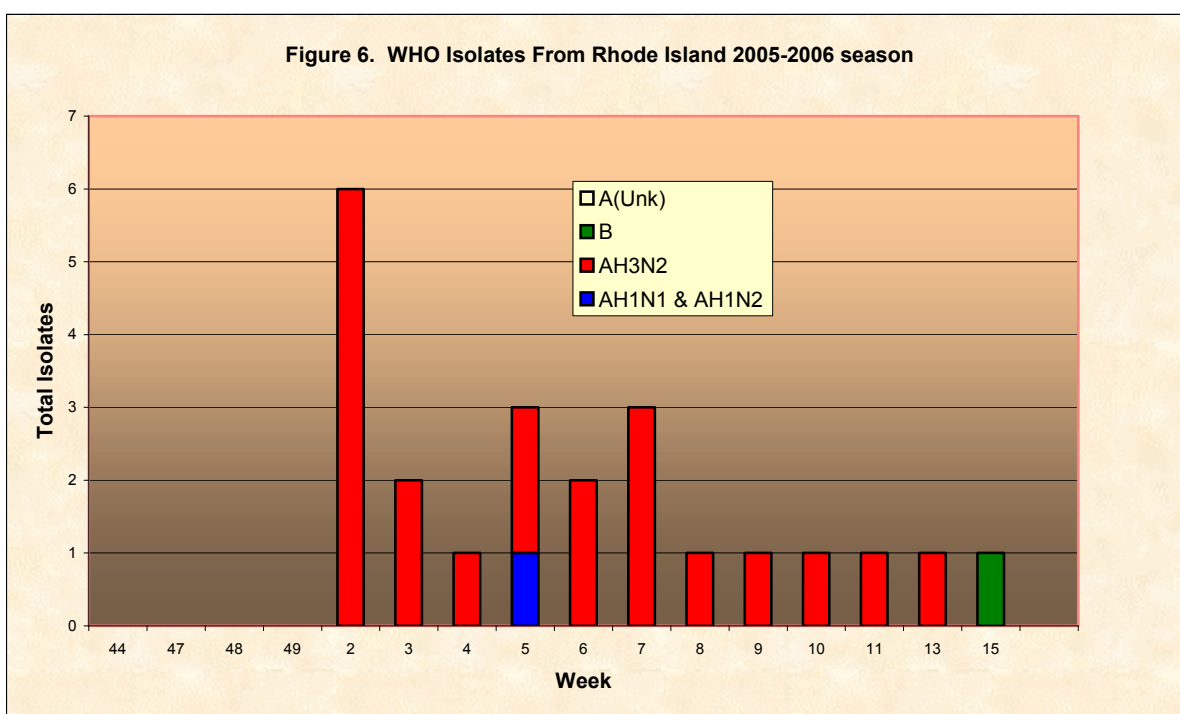
During the course of the 2005-2006 season, there were 675 positive influenza type A rapid tests and 108 positive influenza type B rapid tests reported. This is compared with 905 type A and 85 type B for the 2004-2005 season. Although influenza A viruses predominated during this season, influenza B viruses were increasingly reported as the season progressed (Figure 5). The B viruses impact children and produce milder disease and are not associated with pandemics. This is consistent with the data as reported nationally in the [Weekly Reports on Influenza](#) that is published by CDC. CDC data ([Weekly Report for April 15, 2006](#)) shows that the New England region was among those regions reporting more than 40.0% of isolates as influenza B.



Results of the Subtyping of Specimens by WHO certified laboratories

Influenza A viruses, but not the B strain can be further categorized into subtypes on the basis of two surface antigens: hemagglutinin (H) and neuraminidase (N). Since 1977, influenza A (H1N1) viruses, influenza A (H3N2) viruses, and influenza B viruses predominantly have been in global circulation.

The RI State Laboratory, an accredited WHO laboratory, tested 36 specimens that were submitted by sentinel providers. Twenty three (23) specimens tested positive for influenza; 22 or 96% of these were type A. Of those specimens testing positive for type A influenza, 21 were antigenically characterized as A (H3N2); one was characterized as A(H1N2) & A(H1N1); and one was characterized as Type B (Figure 6). Should a specimen be positive for influenza A and the specimen is negative for H3 and H1 (the expected dominant strains), the specimen is shipped to CDC to detect the avian flu or H5 strain.



2005-'06 Outbreak Reports

Six outbreaks of influenza were reported during the Oct 05---April 06 Influenza season. These reports were from long-term care facilities and were rapidly controlled with implementation of standard infection control measures by the facility (see Appendix B for infection control measures).

During the Oct 04--March 05 Influenza season there were 18 long-term care facilities that had documented outbreaks of influenza. The Office of Communicable diseases coordinated responses to these outbreaks providing lab support, vaccination and prophylaxis recommendations and monitoring for resolution.

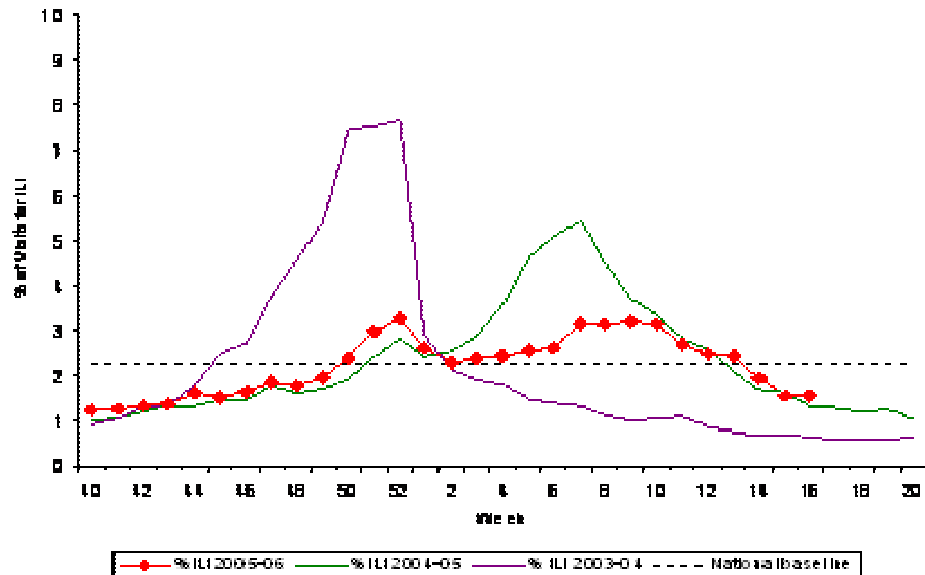
National Influenza Summary 2005-'06

Figure 7 presents the ILI data cumulated over the past three years from all of the U.S. regions. Of particular note is the difference in peak activity times for each season. During the 2003-'04 season peak activity occurred early in the season (mid-late Dec) and was the severest of the three seasons. The

2004-'05 season had a lower peak activity than the year before and the peak activity shifted to later in the season (Feb). The current year (red line) shows the lowest activity with little peak activity in late December.

Figure 7.

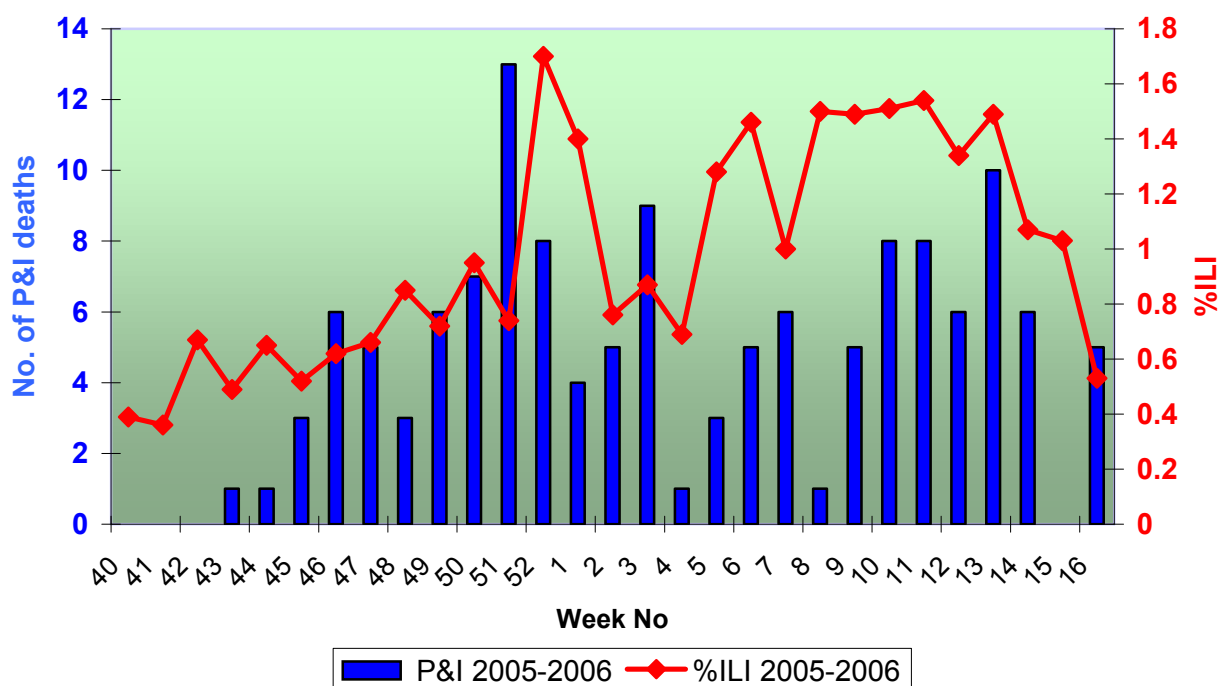
Percentage of Visits for Influenza-like Illness Reported by Sentinel Providers, National Summary 2005-06 and Previous 2 Seasons



121 Cities Mortality Reporting System

As part of its national influenza surveillance effort, the Centers for Disease Control and Prevention (CDC) receives weekly mortality reports from 121 (122 cities are currently participating in the 121 Cities Mortality Reporting System) cities and metropolitan areas in the United States within 2-3 weeks from the date of death. These reports summarize the total number of deaths occurring in these cities/areas each week, as well as the number due to pneumonia and influenza. Together with World Health Organization laboratory results, U.S. private physicians' reports, and state epidemiologist estimates of influenza morbidity, the 121 Cities mortality data are used to assess the impact of influenza each winter. This system consistently covers approximately one-third of the deaths in the United States and provides CDC epidemiologists with preliminary information with which to evaluate the impact of influenza on mortality in the United States and the severity of the currently circulating virus strains. Providence, RI is one of the participating cities. Figure 8 shows the weekly reported pneumonia and influenza mortality numbers for Providence during the current season compared with the %ILI that was reported by the sentinel health providers. The highest number of deaths resulting from pneumonia and influenza occurred during week 51 (December 18-24, 2005). The highest %ILI was reported during week 52 (December 25-31, 2005).

Figure 8. 2005-2006 P&I Mortality Compared to %ILI



Avian Influenza (H5N1) Current Information

Type A influenza viruses, which cause many of the human flu epidemics that occur each winter, are the only viruses ever known to have caused human pandemics, in 1918, 1957, and 1968.

Influenza A (H5N1) virus – also called “H5N1 virus” – is an influenza A virus subtype that occurs mainly in birds, is highly contagious among birds, and can be deadly to them. H5N1 virus does not usually infect people, but infections with these viruses have occurred in humans. Most of these cases have resulted from people having direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces.

Because all influenza viruses have the ability to change, scientists are concerned that H5N1 virus one day may be able to infect humans as well as spread easily from one person to another. Because these viruses do not commonly infect humans, there is little or no immune protection against them in the human population and an influenza pandemic (worldwide outbreak of disease) could begin.

There currently is no commercially available vaccine to protect humans against H5N1 virus that is being seen. However, vaccine development efforts are taking place. Research studies to test a vaccine to protect humans against H5N1 virus began in April 2005, and a series of clinical trials is under way.

As of May 18, 2006 there have been 216 reported cases of Avian Influenza resulting in 122 deaths (Table 1).

Table 1. Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO as of May 18, 2006

Country	2003		2004		2005		2006		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	8	5
Cambodia	0	0	0	0	4	4	2	2	6	6
China	0	0	0	0	8	5	10	7	18	12
Djibouti	0	0	0	0	0	0	1	0	1	0
Egypt	0	0	0	0	0	0	14	6	14	6
Indonesia	0	0	0	0	17	11	23	20	40	31
Iraq	0	0	0	0	0	0	2	2	2	2
Thailand	0	0	17	12	5	2	0	0	22	14
Turkey	0	0	0	0	0	0	12	4	12	4
Viet Nam	3	3	29	20	61	19	0	0	93	42
Total	3	3	46	32	95	41	72	46	216	122

Total number of cases includes number of deaths.
WHO reports only laboratory-confirmed cases.

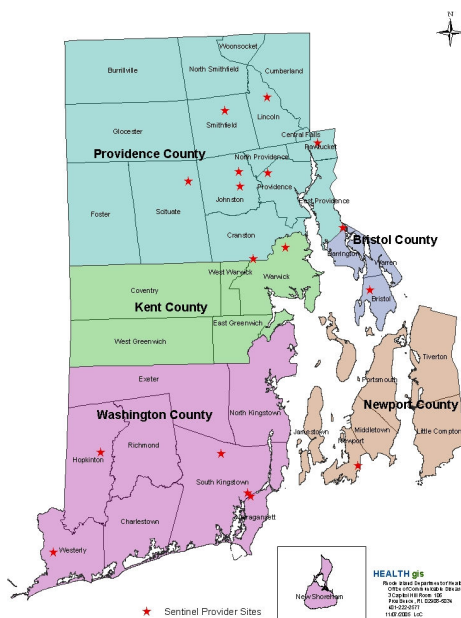
Thank You Sentinel Providers!

Rhode Island Department of Health greatly appreciates the efforts of our State Sentinel Program clinical providers and their staff. These sentinel providers generate data for much of the influenza surveillance program and for the information presented in this report. The Rhode Island Providers currently involved in this program are listed below.

Table 2. Sentinel Providers

RI Sentinel Providers Location by County

Sentinel Flu Sites in Rhode Island, 2005



1. Dr. Rex Appenfeller Anchor Medical Associates 1 Commerce St. Lincoln, RI 02865	10. Dr. Karl Felber Pawtucket Health Center 209 Armistice Blvd Pawtucket, RI 02860 Carol Charon, RN
2. Dr. Vincent D'Alessandro 1857 Atwood Ave. Johnston, RI 02919 (Sherri Bonaminio)	11. Dr. Fred Procopio University of Rhode Island Potter Building Health Center 6 Butterfield Road Kingston, RI 02881 (Chad Henderson, Director)
3. Dr. Louis Moran University Medicine Foundation 133 Post Road Warwick, RI 02888 (Claudia Moran, RN)	12. Lynn Wachtel, RNP Rhode Island College Brown Hall 600 Mount Pleasant Ave Providence, RI 02908 (Matthew McGinn, RN)
4. Dr. Edward Stulik & Dr. Stefano L. Cazzaniga University Medicine Foundation 1525 Wampanoag Trail Suite 202 East Providence, RI 02915 (Deborah Donahue, Office Manager)	13. Dr. William Levin Dr. Donald Derolf Mary Kay Connell, RNP Salve Regina College Health Center 100 Ocre Point Ave Newport, RI 02840 (Jacklyn Parsons)
5. Dr. Rocco Andreozzi Westerly Urgentcare 77 Franklin St. Westerly, RI 02891 (Susan Weeden, Office Manager)	14. Dr. Steven Hokeness Bryant University Health Center 1150 Douglas Pike Smithfield, RI 02917 (Betty Cotter, RNP)
6. Dr. Steven Scott Atwood Primary Care 1526 Atwood Ave Johnston, RI 02919 (Pam DiGiacomo, Office Manager)	15. Dr. Christopher Campagna Wood River Health Services, Inc 823 Main St Hope Valley, RI 02832 (Meredith Eckel-Medical Manager)
7. Dr. Stephen Beaupre Midland Medical 1312 Oaklawn Ave Cranston, RI 02920 (Anna Long, RN)	16. Dr. Alane Torf Bristol County Medical Center 1180 Hope Street Bristol, RI 02809 (Jessica Machado)
8. Dr. Nitin Damle South County Internal Medicine 481 Kingston Rd Wakefield, RI 02879 (Marcia Pellegrino, LPN)	17. Dr. Monica Gross South County Walk-in & Primary 360 Kingstown Road Suite 104 Narragansett, RI 02882 (Jody Robinson, MS)
9. Joan Mullaney, RNP University Medicine Foundation 142 Danielson Pike Foster, RI 02825 Diane Metz-Med.Asst.	

Appendix A. Estimated Level of Influenza Activity

State health departments report the estimated level of influenza activity in their states each week. These levels are defined as follows (note that region corresponds to county in RI):

- **No Activity:** Overall clinical activity remains low and there are no lab confirmed cases.
- **Sporadic:** Isolated cases of lab confirmed influenza in the state; ILI activity is not increased OR a lab confirmed outbreak in a single institution in state; ILI activity is not increased
- **Local:** Increased ILI within a single region AND recent (within the past 3 weeks) laboratory evidence of influenza in the region. ILI activity in other regions is not increased. OR Two or more institutional outbreaks (ILI or lab confirmed) within a single region AND recent lab confirmed influenza in that region. Other regions do not have increased ILI and virus activity is no greater than sporadic in those regions.
- **Regional:** Increased ILI in ≥ 2 but less than half of the regions AND recent lab confirmed influenza in the affected regions. OR Institutional outbreaks (ILI or lab confirmed in ≥ 2 and less than half of the regions AND recent lab confirmed influenza in the affected regions.
- **Widespread:** Increase ILI and/or institutional outbreaks (ILI or lab confirmed) in at least half of the regions AND recent (within the past 3 weeks) lab confirmed influenza in the state.

Appendix B. Infection Control Measures During Times of Influenza Outbreaks

INFLUENZA INSTITUTIONAL OUTBREAKS

Definition: An institutional cluster/outbreak is defined as three (3) or more cases of laboratory confirmed influenza-like illnesses in a long-term care facility (LTCF), school or other congregate environment.

When influenza outbreaks occur in health-care settings, additional measures should be taken to limit transmission. These include:

- Identify influenza virus as the causative agent early in the outbreak by performing rapid [influenza virus testing](#) of patients with recent onset of symptoms suggestive of influenza. In addition, obtain viral cultures from a subset of patients to determine the infecting virus type and subtype.
- Implement [droplet precautions](#) for all patients with suspected or confirmed influenza.
- Separate suspected or confirmed influenza patients from asymptomatic patients.
- Restrict staff movement from areas with outbreaks to other units and buildings.
- If available, administer the current season's influenza vaccine to unvaccinated patients, residents, and health-care personnel. Follow [current vaccination recommendations](#) for nasal and intramuscular influenza vaccines.
- Administer [influenza antiviral prophylaxis and treatment](#) to patients, residents, and health-care personnel according to current recommendations.
- Consider antiviral prophylaxis for all health-care personnel, regardless of their vaccination status, if the outbreak is caused by a variant of influenza virus that is not well matched by the vaccine.

Curtail or eliminate elective medical and surgical admissions and restrict cardiovascular and pulmonary surgery to emergency cases only, when influenza outbreaks, especially those characterized by high attack rates and severe illness, occur in the community or acute care facility.

Appendix C. Week number and corresponding dates for 2005-'06

CDC Week No for 2005-'06	Beginning	Ending
40	02-Oct	08-Oct
41	09-Oct	15-Oct
42	16-Oct	22-Oct
43	23-Oct	29-Oct
44	30-Oct	05-Nov
45	06-Nov	12-Nov
46	13-Nov	19-Nov
47	20-Nov	26-Nov
48	27-Nov	03-Dec
49	04-Dec	10-Dec
50	11-Dec	17-Dec
51	18-Dec	24-Dec
52	25-Dec	31-Dec
1	01-Jan	07-Jan
2	08-Jan	14-Jan
3	15-Jan	21-Jan
4	22-Jan	28-Jan
5	29-Jan	04-Feb
6	05-Feb	11-Feb
7	12-Feb	18-Feb
8	19-Feb	25-Feb
9	26-Feb	04-Mar
10	05-Mar	11-Mar
11	12-Mar	18-Mar
12	19-Mar	25-Mar
13	26-Mar	01-Apr
14	02-Apr	08-Apr
15	09-Apr	15-Apr
16	16-Apr	22-Apr

Appendix D. Glossary

RI Sentinel Provider: a healthcare provider in Rhode Island who volunteers to monitor outpatient visits for ILI during an influenza season. The Rhode Island sentinel providers are part of the National Sentinel Provider Network that is a collaborative effort between CDC and state health departments. The purpose of the Sentinel Provider Network is to monitor outpatient visits for ILI. Rhode Island Sentinel providers report ILI information to CDC on a weekly basis. Information is provided by age group and by total patient visits for all causes for each week. The % ILI for each state is calculated based on the total number of ILI visits during a particular week divided by the sum total of all patient visits during the same week.

ILI: Influenza-Like Illness. Defined as a temperature of $\geq 100.0^{\circ}\text{F}$ (37.8°C) and either cough or sore throat in the absence of known cause.

National Baseline: %ILI that would be expected if influenza viruses were not circulating. The national baseline is 2.2% for this season. The national baseline was calculated as the mean weighted percentage of visits for ILI during non-influenza weeks, plus two standard deviations.

Avian Flu (H5N1): [Avian \(or bird\) flu](#) is caused by influenza viruses that occur naturally among wild birds. The H5N1 variant is deadly to domestic fowl and can be transmitted from birds to humans. At this time the H5N1 virus cannot easily be transmitted from person to person. There is no human immunity to this virus and no vaccine is available.

Pandemic Flu: [Pandemic influenza](#) is a worldwide outbreak of severe flu caused by a virus that is new to humans. Pandemics occur when a new or markedly changed virus develops. Because the virus is new or very different from any virus seen before, there is no natural immunity (defenses) in the human population, and the disease can spread easily from person to person. In a pandemic, many people may get sick at the same time, and many may die.

Seasonal Flu: [Seasonal \(or common\) flu](#) is a respiratory illness that can be transmitted person to person. Most people have some immunity, and a vaccine is available.

Appendix E: For More Information:

Rhode Island Department of Health Influenza Website

<http://www.health.ri.gov/flu/index.php>

Centers for Disease Control (CDC)

<http://www.cdc.gov/flu/>

World Health Organization (WHO)

<http://www.who.int/topics/influenza/en/>

2004-2005 Influenza Outbreak Plan for Rhode Island

<http://www.health.ri.gov/flu/fluoutbreakplan.pdf>

Prevention: Cover your cough print ready flyer

http://www.cdc.gov/flu/protect/pdf/covercough_school8-5x11.pdf

Rules and Regulations Pertaining to the Reporting of Communicable, Environmental, and Occupational Diseases – February 2006.

http://www2.sec.state.ri.us/rules/released/pdf/DOH/DOH_3844.pdf

MMWR Influenza reports:

http://www.cdc.gov/mmwr/mguide_flu.html

Avian Influenza/Pandemic:

Rhode Island Department of Health Avian Flu website

<http://www.health.ri.gov/avian/index.php>

World Health Organization Avian Influenza page

http://www.who.int/csr/disease/avian_influenza/en/

CDC Avian Influenza page:

<http://www.cdc.gov/flu/avian/outbreaks/current.htm>

Rhode Island Department of Health Pandemic Web page:

<http://www.health.ri.gov/pandemicflu/index.php>

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